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ABSTRACT

Information is presented on an informal study designed to identify common bibliographic denominators shared by the faculty at the State University of New York at Albany (SUNYA) that directly contributed to SUNYA's newly developed Ph.D. program in information science. A focus of the study was on understanding how different interpretations of the field, provided by the creators and faculty of the program, may affect the scope of the discipline. Specific objectives were to: (1) determine the committee members' consensus on a domain of information; (2) identify emerging trends in the development of information science; and (3) ascertain bibliographic overlap in the basic research tools suggested by the survey's participants. Of the 32 questionnaires sent, only 13 were fully completed, so data interpretation was limited. An analysis of survey answers is presented, however, which suggests that some insights resulted from the study. Some of these concern the definition of information and information science; the grouping of 56 individually listed domains of study into 5 rank-ordered clusters; and the identification of six major directions of future development of information science (computer science, library science, information science, technology, sociology of knowledge, and management). In addition it is noted that in spite of the recency of the field, over half of all key papers were published in book format; it is also suggested that the listings of key papers, primary journals, textbooks, and professional organizations provided by the respondents may be of interest to university librarians in filling some gaps in their collections. Questionnaire items, responses, and a list of 50 papers identified as "key papers" are included. (SM)

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SURVEY OF COMMON BIBLIOGRAPHIC DENOMINATORS
 AMONG DISCIPLINES PARTICIPATING IN
 THE SUNY-ALBANY Ph.D. PROGRAM
 IN INFORMATION SCIENCE

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Fall 1988
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ABBREVIATIONS USED IN THE REPORT:

- BU : School of Business
- HFA : College of Humanities & Fine Arts
- ISP : School of Information Science & Policy
- PA : Graduate School of Public Affairs
- SM : College of Science & Mathematics
- SB : College of Social & Behavioral Sciences
- M : SUNYA Main Library
- D : Dewey Graduate Library for Public Policy

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A. OVERVIEW.

This informal study was initiated in the context of a larger research project on the foundations of library and information science. The study was focused on a newly developed doctoral study in information science at the State University of New York at Albany (SUNYA). Its overall purpose was to identify common bibliographic denominators shared by the university faculty that directly contributed to the program. The intent of the study was not to determine what is information science, but to understand better how different interpretations of the field, provided by the creators and faculty of the program, may impact the scope of the discipline.

The specific objectives of the study, slightly modified in the initial stage of the project were to: (a) determine the committee members consensus on a domain of information, (b) identify emerging trends in the development of information science, and (c) ascertain bibliographic overlap in the basic research tools suggested by the survey's participants. It is expected that the study may be followed by a more comprehensive survey and analysis of relevant literature, that will allow a comparison of this study's results with the views of other experts in the field.

The survey was limited to the members of the committee responsible for the development of the PhD program in information science at SUNYA in the years 1985-88, and to the individuals designated as the faculty of the program. As stated in the official proposal, the program is interdisciplinary, based on the four structural concepts of information theory, management, organization and policy, complementing other existing university graduate programs. The curriculum is directly supported by the feeder disciplines of business, communications, library science, public administration and computer science. The major emphasis of the program is on developing a model of a scientist-practitioner, who will be involved in research, teaching and applications of research findings in various professional capacities.

I. Scope of the survey

Of the thirty-two questionnaires sent to all involved faculty, nineteen were returned, but only thirteen were fully completed, resulting in a 40.6% valid response rate. This small return severely limits the interpretations of data compiled in the project, preventing a meaningful analysis of the survey's intended population. This limitation is also reflected in the number of responses received from the development committee's members (45.4% of all members), from the faculty designated to teach in the program (38.8% of that group responded), and from the representatives of the disciplines covered by the study (the received answers represent eight out of the twelve targeted disciplines). The survey provides however, a few insights that might justify follow up studies.

II. Evaluation of responses:

Question #1:

The term 'information' has been defined by six respondents as a commodity, by two respondents as a process, and one respondent combined both the commodity & its product in one definition.

- (a) knowledge:
 - evidence or knowledge that some device is in a particular state;
 - knowledge or acquired fact;
 - the knowledge that resides in the human brain, or in electronic, written and physical artifacts;
- (b) symbol:
 - assemblage of language elements (symbols) for communication or capable of communication
- (c) data:
 - an assemblage of data that can be communicated from one person to another;
- (d) input (processed):
 - input predicated by the cognitive system of the person
- (e) document:
 - primary, secondary, tertiary & ephemeral documents;
- (f) signal:
 - signal that flows through an organization
- (g)- one person focused on data and documentation as information carriers.
- (h)- One respondent defined 'information' as the result of processing data:
 - Representation and manipulation of data
- (i)- One respondent included both criteria: as a symbol (see 'b' above) and as a process:
 - Reduction of uncertainty in receipt of communication

The concept of 'information' is defined in the Committee's proposal as: "the content of all human living brains, and all fixed, transient, electronic records; and information inherent in physical artifacts, at any given moment."

Question # 2:

Definitions of the information science are tentatively grouped into three clusters, roughly corresponding to the classification of information science as empirical sciences by U.Mansfield.

[Una Mansfield, "The Wider Scope of Information Research," The Reference Librarian, no.18, Summer 1987, pp.49-70]

1. Cognitive Perspective: Cognitive science studies "the principles by which intelligent entities interact with their environments, The 'natural kind' to which its theories apply are those systems that are governed by representation or by knowledge and goals - the human information-processor is merely a special case of the more general theory of information-processing that it seeks." (Mansfield, op.cit.,p.53). This perspective includes artificial intelligence, semiotics/linguistics, psychology, neuroscience, philosophy, and anthropology.

Definitions: # 2a: - focus on interaction
2b: - focus on neural flow
2c: - focus on predicating system

2. Socio-technological Perspective: "This group of disciplines focuses on problems related to recorded information (or knowledge): its generation, classification, processing, storage, retrieval, display, use, transfer and accessibility." (Mansfield,op.cit.,p.60) The perspective includes computer science, information science and library science together with the information elements of communication science, management science,economics and sociology.

Definitions: # 1 : - focus on placing, organizing, classifying interpretation or meaning of information
3 : - focus on development, transfer & utilization of information
4a: - focus on generation, collection, organization, storage, retrieval, and dissemination of recorded knowledge, how it is created, transmitted, encoded,transformed, used, and valued.
5b: - focus on decision & action
6 : - focus on the intersticies of information with various disciplines,how it is created, organized, accessed, evaluated, disseminated and used, technology used and the impact of information on society
8 : - focus on information theory (coding), its application and its social and economic consequences.

3. Systems perspective: "formal sciences that provide a theoretical base for many of the activities under (1) and (2), as well as for other parts of science." (Mansfield, op.cit.,p.51) It includes information theory, cybernetics and system theory.

Defintions: # 4b: - It is a metadiscipline, bringing together ideas & technologies from other domains, including the social sciences, cybernetics, linguistics, management, neuroscience, systems theory and computer science

5a: - Focus on different systems

[Answer # 7 substituted the term 'information science' by 'information management'; answer # 9 stated that the category covers many concepts & fields.]

The above definitions are in general agreement with the formal all inclusive definition of information science, formulated in the proposed PhD program as a study of information "by scientific methods, and the knowledge, principles and laws derived from such study, covering areas ranging from creation of file structures to simulations of the calculi of thinking. Accordingly, Information Science in its broadest sense is a megadiscipline comprising social sciences, computer science, cybernetics, documentation, artificial intelligence, the cognitive science, communication, information theory, linguistics, management science, philosophy and system theory."

Unfortunately, the size of the sample studied is not large enough to provide some insight to issues such as what in information science is or is not computable, how much mutual impact exists between this and other domains, or to what extent the definitions resemble what Wilson once refered to as "an amorphous assemblage from other disciplines."

Question # 3:

The fifty-six individually listed domains of study in rank of importance to information science are here grouped in five separate clusters, arranged by the number of citations and average rank assigned to them ['no rank' was calculated as rank 3. Numerical references are to the domains listed in the summary answers to Q3; numbers in bracktes list priorities assigned by the respondents, asterisk identifies domains listed by more than one person]

- Cluster #1: Management [including organization, decisions]
13(1), 14(1), 15(3), 16*(3,2), 34(6), 35*(1,2), 36(4), 37(4), 44(4), 45(3)

Number of domains listed: 12
Average rating: 3.4

- 8(3), 12(5), 38(4), 46(5), 54(6), 55(1)

Number of domains listed: 6

Average rating: 4.0

- 20(5), 21*(3,5), 22*(3,5), 23(2), 24(3), 25(3), 26(1), 27(3)

Number of domains listed: 14

Average rating: 4.07

- expert system, optical storage]

Number of domains listed: 12

Average rating: 4.08

- Cluster #5: Social sciences [including behavioral sciences, cognition, psychology, neuroscience, linguistics, social anthropology, social sciences]

Number of domains listed: 14

Average rating: 4.7

The above ranking is not fully satisfactory: although it lists the clusters in terms of their average ranking, the ranking itself is impacted by the number of questions listed and the number of respondents in each cluster.

The following domains of study were listed by

b-more than one respondent
in the same discipline

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# 9  by BU, ISP, SM
# 16  PA, SB
# 19  BU, PA
# 21  ISP, PA
# 31  ISP, SM
# 32  ISP, SB

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# 18 by BU (2x)
# 35 BU (2x)
# 22 ISP (2x)
# 29 ISP (2x)
# 32 ISP (2x)
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Question #4:

Major contributions to the development of information science by the surveyed domains are grouped into five clusters:

CLUSTER #1: Theory: theory in general and of classification, bibliometrics, indexing/abstracting, co-citation [SM,ISP]
Theory of information feedback control of physical stocks and flow, ultimately determining overall organizational performance (PA)

CLUSTER #2: Technology: technology in general, applied & computer technologies, AI, optical storage, collection & dissemination of information [ISP]

CLUSTER #3: Social issues: social environment, social epistemology, information policy & regulations [ISP]

CLUSTER #4: Management: management of information, including creation, organization, storage, reproduction & dissemination of information, decision science & model-based management [BU]

CLUSTER #5: Individual psychology: person's use of information in daily decisions, person's construction system, transfer of information [SB, ISP]

The domain of one respondent is close to the center of information science and can contribute to some degree in any area.

Question #5:

Six major directions of future development of information science were identified:

1. in Computer Science: increased overlap in the area of AI, software engineering & databases [SM, ISP]
Computer simulation models based on a theoretical understanding of how information flows determine organizational performance will ultimately allow us to design improved organizations. (PA)
2. in Library & Information Science: assimilation of technological advances that have changed the limits, economics, and interconnection of storage, reprographics, communications, and computing; increased involvement of librarians in the transfer of information (especially electronic), its interpretation & retrieval with minimal need for professional assistance; human/machine & user/text interface, cognitive systems, research on use of information & its impact on individuals, organization & community, knowledge representation systems [ISP, BU]
3. in Technology: continuing application of technology to information processing; more specialized databases affecting teaching [ISP, HFR]
4. in Sociology of knowledge: societal impact of information technology [ISP]
6. in Management: management & distribution of information resources, increased use of computer systems augmenting or replacing human capabilities and interconnecting disparate computer resources thru telecommunication. [BU]

Question #6:

- Forty-nine key papers in information science were published by the respondents in eight domains. [numerical references are to the titles listed in the summary answers to Q6]:

- 26 in School of Information Science & Policy (including Librarians) [1,3,5-8,11,13,16-18,22,26-28,30,31,34,35,37-39,41,43-45];
- 8 in School of Business [2,9,10,15,20,25,32,42];
- 6 in College of Social & Behavioral Science [12,19,21,29,36,40];
- 4 in Graduate School of Public Affairs [47-50];
- 4 in College of Science & Mathematics [4,23,24,33];
- 1 in College of Humanities & Fine Arts [14]

Some of the references listed above are from a list of key readings provided to students in a general survey course.

One respondent believes that there are no key papers in information management because of the fast changing field.

There is no overlap between domains, each key paper was listed only once, although some papers covered subjects of interest to more than one domain (e.g., papers related to computer science).

As expected, most key papers were listed in the domain of the respondent; each domain had some titles also listed in computer science. In addition a few key papers identified in library and information science were listed outside of its own domain.

Question #7:

The respondents identified thirty-four journals published in their domains. Titles of these journals are here listed in five clusters and in order of the frequency of citation [numbers refer to the titles listed in the summary answers to question #7, asterisk indicates that the title was listed by two domains]

- 16 in School of Information Science & Policy (including librarians) [3,6,8,13-15,17,19,21-25,30,31,34];
- 8 in School of Business [7*,9*,10,11*,12,16,26,28]
- 6 in College of Social & Behavioral Sciences [4,5,18,20,27,29];
- 4 in Graduate School of Public Affairs [9*,11*,32,33];

3 in College of Science & Mathematics [1,2,7*]

As indicated above two journals were listed twice by School of Business & Graduate School of Public Affairs [9 & 11], one journal by School of Business and College of Science & Mathematics [7].

Two journals were listed twice by two respondents in the School of Information Science & Policy [17 & 19]

Question #8:

Only eight textbooks useful as introductory to the field of information science were identified: two in Library & Information Science [2,7], two in College of Social & Behavioral Sciences [3,6], and one each in School of Business [1], College of Science & Mathematics [5], College of Humanities & Fine Arts [4], and Graduate School of Public Affairs [8].

Three respondents did not believe that there is a satisfactory text that covers all aspects of the field; one of them maintained that Information Science is moving too fast for text writers to keep pace with it, and two did not answered the question.

Question #9:

Thirty principles, theories or methodologies in Information Science were identified by respondents representing the following disciplines:

a. SCHOOL OF INFORMATION SCIENCE & POLICY [including librarians]:

1. Artificial Intelligence
2. Bibliometrics
3. Computational modeling
4. Facilitation of use of records
5. Information economics
6. Information theory
7. Language elements (symbols), assemblage of
8. Linguistics
9. Mathematical modeling
10. Programming
11. Psychological processing
12. Scaling, multidimensional & psychophysical
13. Systems analysis methodologies
14. Systems theory
15. Uncertainty in receipt communication

b. SCHOOL OF BUSINESS:

1. Computer science
2. Decision sciences
3. Decision support systems
4. Expert systems
5. Management information system
6. Management science (model based)

- c. COLLEGE OF SOCIAL & BEHAVIORAL SCIENCES:
 - 1. Constructionist premise
 - 2. Information processing (research approach)
 - 3. Linguistics (research approach)
 - 4. Reasoning (research approach)
- d. COLLEGE OF SCIENCE & MATHEMATICS:
 - 1. Decision modeling
- e. GRADUATE SCHOOL OF PUBLIC AFFAIRS:
 - 1. Computer simulation
 - 2. Social judgment analysis
 - 3. Small group decision support research
 - 4. Expert system research

One respondent considered this question to be too vague to answer. As listed above 'decision support system' & 'expert system' were listed by School of Business & Graduate School of Public Affairs.

Question #10:

This question identified twenty-three professional/scholarly organizations of interest to only three disciplines:

- 1. SCHOOL OF INFORMATION SCIENCE & POLICY [including librarians]:
Listed eighteen organizations [1-12, 14-19]
- 2. SCHOOL OF BUSINESS:
Listed five organizations [9, 13, 14, 20, 21]
- 3. GRADUATE SCHOOL OF PUBLIC AFFAIRS:
Listed three organizations [19, 22, 23]

None were listed by other disciplines.

One respondent commented: "Not sure I understand. There are dozens of societies that are relevant..." listing "A.S.I.S, Amer.Soc. of Indexers, A.L.A., N.F.A.I.S. (not S.L.A. to any great extent), ACM, AAAS, and a few others."

Two organizations were listed by School of Information Science & Policy and School of Business [9, 14], and one organization by School of Information Science & Policy and Graduate School of Public Affairs [19].

III. Concluding remarks.

A. The small number of responses to the questionnaire prevents a satisfactory description of the profiles of domains covered by the survey. Especially the omission of comments from the faculties of Schools of Education and the Social Welfare explains lack of references in the study to the theoretical foundations of these two domains.

B. The results of the study justify to some degree the following generalizations:

(a) The domains identified by the respondents correspond to the domains defining information science by the program's committee.

(b) Uniformity in answering various questions was minimal.

Q1-2: There was no agreement in the definitions of information and information science: six respondents defined information as a commodity, two as a process and one used both criteria; six components in the definitions of information science resembled socio-technological perspective, two referred to the system perspective and one definition was formulated within the cognitive perspective.

Q 3: Six domains of study were listed by representatives of more than one discipline and five domains were identified by more than one respondent in the same discipline.

Q4-5: There was no clear overlap in the listings of major contributions to the development of information science or in the directions for its future development.

Q 6: Although no key paper was identified more than once, the titles of many of these papers suggest relevance to more than one discipline.

Q 7: Two journals were listed by respondents of two disciplines, and two respondents in one discipline identified the same two journals.

Q 8: Textbooks were identified by respondents in six of the surveyed disciplines; three respondents however questioned the value of such publications.

Q 9: Two principles, theories, or methodologies were identified by respondents of two different disciplines.

Q 10: Professional/scholarly organizations were listed by three disciplines only, with three organizations listed twice by representatives of different disciplines.

This minimal number of common denominators suggests not only a complex and diversified field of information science but it also illustrates a degree of divergence in the focus of each discipline participating in the program. Indeed, these characteristics were noted in two comments, one stating that although many papers may be of value at a particular point of time, no key paper in the field exists (Q6-31), and the second commenting on the eclectic character of information science (Q8-#8)

(c) As expected most bibliographic references were made to recent publications. The three oldest references were to Vannevar Bush, Shannon's and Wiener's classics (Q6:7,38,45), and at least three were published in 1988 (Q6:12,19,21).

(d) In spite of the recency of the field, over half of all key papers were published in book formats

(e) Listing of key papers (Q6), primary journals (Q7), textbooks (Q8) and professional organizations (Q10) may be of interest to the university librarians in filling some gaps in the collection. (Missing volumes were not identified)

(f) The survey did not provide enough material to identify the generic definitions and functions of the field, leaving unanswered questions already asked before by other writers, such as: "What are the necessary criteria that would describe essential resemblances and differences of the field with other disciplines?" "What can information science offer that none of the other scholarly disciplines cannot?" "How unique are the concepts embraced by the discipline?" "Is information policy synonymous with information management, or is information management an aspect of information policy?" "Is the concept 'information' a phenomenon, a technology or a process?" "Is the definition of the discipline really necessary."

I wish to acknowledge with thanks the advise and support received from Vice-President F. Lees and Dean R. Halsey in developing this study, and to express my appreciation to all respondents for their participation in the survey.

B. RESPONSES TO THE QUESTIONNAIRE

Within the frame of reference of the proposed Ph.D. Program in Information Science, what is your definition of each of the following terms, based on your current academic affiliation?

0 1. 'information'

1. "1. Assemblage of language elements (symbols) for communication or capable of communication. 2. Reduction of uncertainty in receipt of communication." (ISP)

2. "Evidence or knowledge that some device (physical or abstract) is in a particular state, as opposed to any of its other possible states." (SM)

3. "Processed input. Input becomes information when it is 'predicated' by the cognitive system of the person (or whatever). One could say 'data' rather than input, but 'data' allows one to infer that what is 'out there' is 'given'!! From my perspective I don't care!!" (SB)

4. "A(n) assemblage of data in a comprehensible form which is able to be communicated from one person to another, either orally or via print or some other medium." (ISP)

5. "Information may be defined as the knowledge that resides in the human brain, in all electronic and written records, and potentially, in physical artifacts." (ISP)

6. "The representation and manipulation of data, both formatted and textual, so as to convey knowledge concerning the real world that is useful to the recipient." (BU)

7. "Knowledge or facts acquired." (ISP)

8. "I suppose a dictionary definition is adequate for my purpose. I am more interested in the form that information takes in offices, libraries, and other work environments. Specifically, I'm interested in data and documentations as information carriers." (ISP)

9. "The 4 types of information in the humanities: (1) Primary documents, including objects, (2) Secondary documents, interpreting primary documents, (3) Tertiary documents (reference work), (4) Ephemeral documents (written and oral)." (HFA)

10. "An informal or formal 'signal' that flows through an organization. Information is not constrained to data elements within formal data systems. Flows within an organization are of two types -- information flows and flows of physical quantities such as goods, people and dollars. Individual flows act to control physical flows thereby determining overall organizational performance." (PA)

Q2. 'Information Science'

1. "Placing interpretations or meaning on information, and organizing/classifying such meanings. The information may derive from states of human and political systems, as well as mechanical ones." (SM)

2. "The study of the interaction between input and one's construction (predicating) system. Very broad - any scientist could study any part of it - the 'shape' of input; translating input into neural flow, the building of the predicating system! etc. I doubt if a department in a school of policy should be doing it." (SB)

3. "The study of the development, transfer and utilization of information." (ISP)

4. [a] "Information science is that academic discipline that deals with the generation, collection, organization, storage, retrieval, and dissemination of recorded knowledge. It is the scientific study of information: how it is created, transmitted, encoded, transformed, measured, used, and valued." [b] "It is a metadiscipline, bringing together ideas and technologies from other domains, including the social sciences, cybernetics, linguistics, management, neuroscience, systems theory and computer science." (ISP)

5. [a] "A field of study that combines approaches from several disciplines so as" [b] "to design, develop, implement and evaluate systems that store and process data into a form that is of value in current and perspective actions or decisions." (BU)

6. [With the relation] "... to the definition of Albany's proposed Information Science Ph.D. program which is built on faculty strengths such as modeling of decision-making, information systems design, information processing, the development of expert systems and the organization and evaluation of recorded information. Our program recognizes the emerging importance of information and focuses on the interstices of that subject with various disciplines." [With relation to my discipline] "... I would define it more narrowly as: the study of how information is created, organized, accessed, evaluated, disseminated and used. The technology used to facilitate these processes and the impact of information on society are important aspects of this definition as well." (ISP)

7. "I don't think this term is meaningful since 'information science', unlike other sciences, does not formulate laws or invariably utilize experimental methodologies designed to test the validity of hypotheses. I prefer the term 'information management' to denote the field in which I'm involved. The phrase 'information scientist' does have some meaning in the British sense...that it denotes a scientist, such as a chemist, who is interested in scientific information as opposed to laboratory work. When used in that way, the opposite of an 'information' scientist is a 'laboratory' scientist." (ISP)

8. "Study of matters relating to the facilitation of use of records." (ISP)

9. "Includes: information theory (a branch of Communication theory devoted to problems in coding) and its applications (all modes of access to the raw material-data-online and through optical storage technologies), as well as its social and economic consequences." (HFA)

10. "Many concepts or fields are held under this loose category." (PA)

03. List six domains of study, including your own, in descending order of their centrality to the inter-disciplinarity of Information Science.

- 1.- Anthropology, social see: Social Anthropology
- 2.- Applied Artificial Intelligence: RANK:3; (BU)
- 3.- Artificial Intelligence: RANK:5 (SM)
- 4.- AI/Expert knowledge-based system: RANK:3 (BU)
- 5.- Behavioral Science: RANK:5,6 (BU)
- 6.- Cognition: RANK:1 (SB)
- 7.- Cognitive science, the functioning (processing) of the predicative system: RANK:2 (SB)
- 8.- Communication Science: RANK:3 (SM)
- 9.- Computer Science: RANK:1(SM), 1(ISP), 2(BU), 3(ISP)

- 10- Computer Science (Applied): RANK:2 (BU)
- 11- Computing science modeling: RANK:6 (SB)
- 12- Cybernetics: RANK:5 (ISP)
- 13- Decision Science: RANK:1 (BU)
- 14- Decision Science (incl.DSS-Decision Support System): RANK:1 (BU)
- 15- Decision Support Systems: RANK:3 (BU)
- 16- Decision-making: RANK:3 (SB), RANK:2 (PA)
- 17- Developmental psychology predicating system (construction): RANK:1 (SB)
- 18- Economics, Organizational: RANK:5 (BU), 6 (BU)
- 19- Expert System: RANK:4 (BU), RANK:3 (PA)
- 20- Indexing & Retrieval: RANK:5 (BU)
- 21- Information management: NO RANK, (ISP), RANK:5 (PA)
- 22- Information organization (eg indexing): NO RANK (ISP), RANK:5 (ISP)
- 23- Information Policy & Regulation: RANK:2, (ISP)
- 24- Information Processing Technology: NO RANK (ISP)
- 25- Information Retrieval: NO RANK (ISP)
- 26- Information Science: RANK:1 (ISP)
- 27- Information Systems Analysis: NO RANK (ISP)
- 28- Information Technology (application & evaluation): RANK:5 ISP)
- 29- Information Theory: RANK:1 (ISP), NO RANK (ISP)
- 30- Information Use, Users, Education, Preferences, Studies of: RANK:3 (ISP)
- 31- Library Science: RANK:2 (SM), RANK:4 (ISP)
- 32- Linguistics: RANK:1 (ISP), RANK:2 (SB), RANK:2 (ISP)
- 33- Linguistics, Text display: RANK:4 (SB)
- 34- Management: RANK: 6 (SM)
- 35- Management Information Systems (MIS): RANK:1 (BU), RANK:2 (BU)
- 36- Management Science: RANK:4 (ISP)
- 37- Management Science (Model-based): RANK:4 (BU)
- 38- Mathematics (Quantitative Methods): RANK:4 (BU)
- 39- Neuroscience: RANK:3 (ISP)
- 40- Neuroscience (Translation of inputs into neural flow): RANK:5 (SB)
- 41- Optical Stotage Technologies: RANK:1 (HFA)
- 42- Optical Storage Technologies, their consequences on research: RANK:2 (HFA)
- 43- Optical Storage Technologies, their consequences on teaching (curriculum): RANK:3 (HFA)
- 44- Organization: RANK:4 (SM)
- 45- Organization of information & its management: RANK:3 (ISP)
- 46- Philosophy: RANK:5 (ISP)
- 47- Processing Technologies and Methods, Studies of RANK:3 (ISP)
- 48- Psychology: RANK:2 (ISP)
- 49- Psychology, cognitive & social: RANK:6 (BU)
- 50- Records (Characteristics, Demographics, Applications), Study of: RANK:3 (ISP)
- 51- Social Anthrhropology (the arrangement of inputs (social, cultural, etc): RANK:4 (SB)

- 52- Social Environment in which information is created and consumed: RANK:4 (ISP)
 - 53- Social Sciences, both theoretical & applied: RANK:6 (ISP)
 - 54- Systems Theory: RANK:6 (ISP)
 - 55- Systems Dynamics: RANK:1 (PA)
 - 56- Data Base Design:RANK:4 (PA)
 - 57- Enterprise Design:RANK:6 (PA)
- Q4. What are the major areas in which your domain of study contributes to the development of information science?
- "Decision sciences, including DSS; MIS & applied computer science; Applied artificial intelligence & Model-based management science." (BU)
 - "Purely technological and theoretical." (SM)
 - "I believe I am close to the center, so can contribute to some degree in any area." (ISP)
 - "Information policy and regulations; The organization and management of information; The application and evaluation of information technology; The information organization and the social environment in which information is created and consumed." (ISP)
 - "Theory of Classification; Bibliometrics; Indexing and abstracting; Social epistemology; Co-citation analysis; and Communication." (ISP)
 - "My own work has focused on modeling those aspects of a person's construction system by which inputs from self (particularly self-as-parent) are processed." (SB)
 - "I study how people use information when making important decisions in their lives." (SB)
 - "The study of the collection and dissemination of information and of the most effective means of transferring information from one person or group to another." (ISP)
 - "Information management is an applied area of study. It is concerned with the effective and efficient creation, storage, retrieval, reproduction, and dissemination in a variety of work environments." (ISP)
 - "Application of the technology of computer science to satisfy business managers' needs for information to use in decision making." (BU)
 - "Optical storage technologies and their consequences on research and on teaching (curriculum)." (HFA)

- "A theory of how information feedback can control physical stocks and flow, ultimately determining overall organizational performance." (PA)
05. What do you anticipate to be the directions for future development of information science in general and within your scholarly domain in particular?
- "I am unsure of the future shape of Information Science in general. I do expect an increased overlap with Computer Science in the areas of A.I., and Software Engineering, Database." (SM)
 - "Librarians are becoming increasingly involved in the transfer of electronic (rather than printed) information and are going to have to do research on ways of interpreting and extracting information for patrons rather than simply pointing them to it." (ISP)
 - "Continued application of technology to information processing problems." (ISP)
 - "Development of systems to deliver information to the ultimate user with minimal need for professional assistance." (BU)
 - "Information Science in general: Human/Machine interface; intelligent or cognitive systems, AI. In my field, the societal impact of information technology and the user interface are and will continue to be major research areas." (ISP)
 - "Exploration and development of the sociology of knowledge within the domain of information science shared with librarianship. Badly needed is research on and documentation of uses made of information, focusing on its variable impact on individuals, organizations, and the community at large. Another task is to devise better knowledge representation systems, including the diachronically responsive, flexible interfaces between users and texts." (ISP)
 - "More and more specialized databases, more and more used by scholars, and more and more available to students as well, thus changing the face of teaching, which will also become more interactive." (HFA)
 - "Fantastic. U at A had better get with it, or we will soundly take our place as a solid backwater institution!" (SB)
 - "Assimilation of the impact of recent technological advances that have changed the limits, economics, and interconnection of storage, reprographics, communications, and computing." (ISP)

- "Increased concern with managing and distributing information resources. Increased use of computer systems to augment or replace human capabilities. Merging and interconnecting of disparate computer resources thru telecommunications." (BU)
- "I believe that computers simulation models based on a theoretical understanding of how information flows determine organizational performance will ultimately allow us to design improved organizations." (PA)

Within the literature of information science as it is defined within your scholarly domain, please suggest the following:

06. Five or more key papers addressing information science:

1. Annual Review of Information Science & Technology. (ISP) SUNYA:Z699.A1A65 (M/D)
2. Anthony. Planning & control systems, 1965 (BU); SUNYA:HD31.A59 (M)
3. ASIS Proceedings (ISP); SUNYA: Z699.A1A6
4. Barstow, D. "Knowledge-Based Software Tools" An. Rev. of C.S., 1987. (SM), SUNYA:QA76.6B372 (M)
5. Boorstin, Daniel J., The Discoverers, 1983 (ISP), SUNYA:CB69B66 (M)
6. Boorstin, Daniel. Hidden History: Exploring Our Secret Past, 1987. (ISP) SUNYA: Not in the library
7. Bush, Vannevar, "As We May Think," Atlantic Monthly, 176(1), July 1945, p.101-108. (ISP) SUNYA: AP2A8xA
8. Chomsky, Noam. Rules & representations, 1980 (ISP), SUNYA: P106.C544 (M)
9. Codd, E.F. A relational model of data for large shared data banks (Comm. of ACM); (BU), SUNYA:QA76.A772
10. Davis & Olson. Management Information Systems, 1985 (BU), SUNYA: Not in the library
11. De Gennaro, Richard. Libraries, Technology and the Information Marketplace: Selected papers, 1987 (ISP), SUNYA: Not in the library [on order]

12. Dweck, C.S. & Leggett, E. "A social-cognitive approach to motivation and personality" *Psychological Review*, 1988, v.95, 256-273 (SB), SUNYA:BF1P7
13. Eco, Umberto. *The Name of the Rose*, 1980. (ISP) SUNYA:Not in the library
14. Forester, Tom (ed) *The Information Technology Revolution*, 1985 (HFA), SUNYA:QA76.9.C66I53 1985 (M,D)
15. Garry & Scott Maton. *A Framework for management information system*. *Sloan Management Review*, 1971. (BU), SUNYA:HD28S46x
16. Highet, Gilbert. "The Wondrous Survival of Records," *Horizon*, 5(2), November 1962, 74-95. (ISP) SUNYA:AP2H788
17. Grannis, C.B. *What Happens in Book Publishing*, 2nd ed. 1967. (ISP) SUNYA:Z471.67 (M/D)
18. Hildreth, Charles. *Library Automation in North America: A reassessment of the impact of new technologies on networking*, 1987 (ISP), SUNYA: Not in the library
19. Jaeger, M. & Rosnow, R.L. "Contextualism & its implications for psychological inquiry." *British Journal of Psychology*, 1988, v.79, 63-765, 1988 (SB), SUNYA:BF1B&
20. Keen, P. & Scott Morton *Decision support systems: An organizational perspectives*, 1978 (BU), SUNYA: HD30.23K35
21. Kintsch, W. "The role of knowledge in discourse comprehension: A construction-integration model." *Psychological Review*, 1988, v.95, 163-182 (SB), SUNYA:BF1P7
22. Koenig, Michael E.D. "The Information Controllability Explosion," *Library Journal*, 107(19), November 1, 1982, 2052-2054 (ISP) SUNYA: Z671.L7
23. Kowalski, R. "Algorithm = Logic + Control" *Comm ACM*, (SM), SUNYA:QA76.A772
24. Levesque, H. "Knowledge Representation & Reasoning." *Ann.Rev. of Comp.Sci.*, 1986 (SM), SUNYA:QA75.5A54 (M)
25. Lucas, H.W. "Why information systems fail" (BU), SUNYA:T58.6L83 (M)
26. Machlup, Fritz. *Knowledge: Its creation, distribution, and economic significance (series of volumes)*. (ISP), SUNYA:AZ505.M28 vol 1 (only)
27. MacKay, Donald M. *Information mechanism, and meaning*, 1969 (ISP), SUNYA:Q360.M3 (M,D)

28. Manzer, Bruce W. The Abstract Journal, 1790-1920:Origin, Development and Diffusion, 1977 (ISP),SUNYA:Z695.9M35 (M/D)
29. Mascolo,M.F. and Mancuso,J.C. "The structure and content of emotion knowledge: A prototype approach (preprint), (SB), SUNYA: Not in the library
30. Meckler, Alan M. Micropublishing: A History of Scholarly Micropublishing in America, 1939-1980, 1982 (ISP). SUNYA:Z286.M5M (M/D)
31. Newell, Allen, and Simon, Gerbert A. Human problem solving, 1972 (ISP), SUNYA:BF441.N74 (M)
32. Nolan,R.W. "Managing the computer resource: A stage hypothesis" (Comm. of ACM), (BU), SUNYA: PER QA76A772
33. Perrault & Grosz. "Natural Language Interfaces" Ann.Rev.of C.S.,1986, (SM), SUNYA:QA75.5A54 (M)
34. Price, Derek J. De Solla, "Diseases of Science," in Science Since Babylon, 2nd ed. 1975 (ISP) SUNYA:Q171. P9465 (M)
35. Pylyshyn,Zenon W. Computation & cognition: Issues in the Foundations of Cognitive Science,1985 (ISP), SUNYA: Not in the Library [Another edition, title vary: BF311.P93 1984 (M)]
36. Rychlak,Joseph F. George Kelly and the concept of construction.mss,88(?) (SB), SUNYA: Not in the Library [n.p.]
37. Schmandt-Besserat, Denise, "The Earliest Precursor of Writing," Scientific American, 238(6),50-59 (ISP) SUNYA:AP2A53x
38. Shannon,Claude E., "A Mathematical theory of communication," in Bell System Technical Journal, 1948.(ISP) [also in separate publication: TK5101.S45 1962]
39. Shurkin, Joel. Engines of the Mind: History of the Computer, 1984 (ISP) SUNYA: QA76.17 (D/M)
40. Singer,J.L.& Kolligian,J. Personality: Developments in the study of private experience. In: M.R.Rosenzweig and L.W. Porter (Eds) Annual Review of Psychology,1987, v.38,533-574 (SB), SUNYA:BF30.A56
41. Steinberg, S.H. Five Hundred Years of Printing, 2nd ed.,1976 (ISP) SUNYA: Z124.S8 (M/D)
42. Stevens, Myers and Constantine, "Structured design" IBM Sys.J.,v.13,no.2,115-139,1965 (BU), SUNYA:QA76.I572x
43. Walker, Gay, "Preservation at Yale and Beyond," Yale University Library Gazette, 62(1-2),October 1987 (ISP) SUNYA: Z733.Y17

44. Wells, H.G. World Brain, 1983 (ISP) SUNYA: HM73.W4 (M)
45. Wiener, Norbert. Cybernetics, 1948 (ISP), SUNYA:QA276.W48 (M)
- 46." I don't believe that there are any ..."key" papers in info management. Since much of my field's content is technology based, publications become obsolete fairly quickly. There are many books and articles that can prove valuable at a particular point of time, however." (ISP)
47. Forrester, Jay W. "Information Sources for the National Model," [In:Collected Papers. SUNYA:HD20.5F66, M] (PA)
48. Forester, Jay W. "Counter-Intuitive Behavior of Social Systems." Technology Review, 73(1971), 52-68 (PA)
49. Mosheilde (?) et al. "Instabilities and Chaos in Non Linear Dynamical Systems." Sys. Review, 4(4) (PA)
50. Sterman's John (?) and John Mercatt's (?) work on bounded rationality in organizational performance." (PA)
07. Journals primarily publishing refereed papers in your scholarly domain which also present articles on information science:
 - 1- ACM Transactions on Database Systems, (SM), SUNYA:AQ76.9 D3A88A
 - 2- ACM Transactions on Software Engineerings, (SM), SUNYA:Not in the Library
 - 3- Bowker Annual (High Technology Bibliography), (ISP), SUNYA:Z731.A47 (D)
 - 4- Cognition and Memory (SB), SUNYA: BF371.C57
 - 5- Cognitive Psychology (SB), SUNYA: BF309.C62
 - 6- College & Research Libraries (ISP) SUNYA: Z671.C6
 - 7- Communications of the ACM [the Association for Computing Machinery] (BU,SM), SUNYA: QA76.A772
 - 8- Current Research in Library & Information Science (ISP), SUNYA: Z671.C86x
 - 9- Decision Science (BU), (PA) SUNYA: HD28.D43x
 - 10-IBM Systems Journal (BU), SUNYA: QA76.I572x

- 11-IEEE (Institute of Electrical & Electronic Engineers)
Transactions on System, Man, & Cybernetics (BU), (PA)
SUNYA: TK1I395x
- 12-Information & Management (BU), SUNYA: T58.6 I54x
- 13-Information Processing & Management (ISP), SUNYA:Z699.A1I6
- 14-Information Technology & Automation (ISP), SUNYA:Not in the
Library
- 15-Information Technologies and Libraries (ISP),
SUNYA:Z678.9 AlJ368xA
- 16-Interfaces (BU), SUNYA: HD28I57x
- 17-JASIS [Journal of the American Society for Information
Science), (ISP) SUNYA: Z699.A1A55x
- 18-Journal of Behavioral Decisison Making (SB), SUNYA: Not in
the Library
- 19-Journal of Documentation (ISP), SUNYA:Z1007.J9
- 20-Journal of Experimental Psychology (SB), SUNYA:BF1J6
- 21-Library & Information Science Research (ISP)
SUNYA: Z671.L53x
- 22-Library Quarterly (ISP) SUNYA:Z671.L713
- 23-L.R.T.S.(ISP), SUNYA:Z671.L7154
- 24-Library Technology Reports (ISP) SUNYA:Z669.7A4 (D)
- 25-Library Trends (ISP), SUNYA: Z671.L6173
- 26-Management Science (BU) SUNYA: HD28B84x Holdings end 1970
[Institute of Management Science Bulletin]
- 27-Memory and Cognition (SB), SUNYA:BF311.M45x
- 28-MIS Quarterly [Management Information Science Quarterly]
(BU) SUNYA: T58.6M35x
- 29-Psychological Review (SB) SUNYA: BF1P7
- 30-Scientific American (ISP), SUNYA: T1S5
- 31-Special Libraries (ISP), SUNYA: Z671.S72
- 32-Systems Dynamics Review; (PA) SUNYA: T57.6A1597

- 33-Simulation (PA)
 - 34-Most library science journals (ISP)
 - 35-None (HFA)
-
- 08. Any textbooks that could be used as an introduction to the field of information science that would also be relevant for your own field of study.
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- 1- Davis, G. & Olson, M. Management Information Systems Conceptual Foundation, Structure and Development, 1985 (BU) SUNYA: Not in the Library
 - 2- Fang, Josephine R. and Paul Nauta (eds). International Guide to Library and Information Science Education, 1985. (ISP) SUNYA: Z668.I57x 1985
 - 3- Flanagan, O.J. The Science of Mind, 1984 (SB) SUNYA: BF38F58
 - 4- Forester, Tom (ed) The Information Technology Revolution, 1985. (HFA) SUNYA: QA76.9C66I53 1985 (M,D)
 - 5- Owens & Edwards. Information Processing Today with Applications (nd), (SM) SUNYA: Not in the Library
 - 6- Smythe, M.M., Morris P.E., Ellis, A.W. Cognition in Action, 1987 (SB) SUNYA: Not in the Library
 - 7- Stuart-Subbs, Basil (ed) Changing Technology and Education for Librarianship and Information Science, 1985 (ISP) SUNYA: Z668.C53 1985
 - 8. Richardson, G.P. Introduction to System Dynamics Modeling. (PA) SUNYA:QA402.R48, M.
 - 9- No satisfactory text that covers all aspects of the field. Information Science is an eclectic field and moving too fast for text writers to keep pace (ISP) [paraphrased]
 - 10-"I am not sure that a good textbook exists. I prefer to rely on a variety of readings so far". (ISP)

09. What principles, theories, or methodologies in information science would be appropriate or could enhance the conduct of inquiry in your own field of study?

- 1- Artificial Intelligence (ISP)
- 2- Bibliometrics (ISP)
- 3- Computational modeling (ISP)
- 4- Computer science (BU)
- 5- Computer Science (applied) (BU)
6. Computer simulation (PA)
- 7- Constructionist premise (SB)
- 8- Decision modeling (SM)
- 9- Decision Sciences (BU)
- 10- Decision Support System [DSS] (BU)
Small Group Decision Support Research (PA)
- 11- Expert Systems (BU), (PA)
- 12- Facilitation of use of records
- 13- Information economics (ISP)
- 14- Information processing (research approach) (SB)
- 15- Information theory (ISP)
- 16- Language elements (symbols) for communication or
capable of communication, assemblage of (ISP)
- 17- Linguistics (research approach) (SB)
- 18- Linguistics (transformational & computational) (ISP)
- 19- Management Information System [MIS] (BU)
- 20- Management science (model based) (BU)
- 21- Mathematical modeling (ISP)
- 22- Programming (ISP)
- 23- Psychological processes (ISP)

- 24- Reasoning (research approach) (SB)
- 25- Scaling, multidimensional (ISP)
- 26- Scalling, psychophysical (ISP)
- 27- Social Judgment Analysis (PA)
- 28- Systems analysis methodologies (ISP)
- 29- Systems theory (ISP)
- 30- Uncertainty in recipient of communication (ISP)
- 31- The question is too vague to respond to (ISP)

Q.10. What professional/scholarly organizations in information science would be appropriate for the exchange of scholarly information within your own field of study?

- 1- A.A.A.S. (ISP) Publications in SUNYA Libraries: YES
- 2- American Society of Indexers (ISP), SUNYA Libraries: Publications in SUNYA Libraries: [Indexer] YES
- 3- AIIM [Association for Information and Image Management] (ISP) Publications in SUNYA Libraries: YES [Z265.I53x]
- 4- American Library Association (ISP) Publications in SUNYA Libraries: YES
- 5- American Society for Information Science (ISP) Publications in SUNYA Libraries: YES
- 6- ARMA [Association of Record Management & Administration] (ISP) Publications in SUNYA Libraries: HF5736.A75x (D)
- 7- ASM [Association for System Management] (ISP) Publications in SUNYA Libraries: YES [latest is 1976]
- 8- Association for Computational Linguistics ((ISP) Publications in SUNYA Libraries: YES
- 9- Association for Computing Machinery (ISP, BU) Publications in SUNYA Libraries: YES
- 10- Association for Library & Information Science Education (ISP) Publications in SUNYA Libraries: YES

- 11- Canadian Association for Information Science (ISP)
Publications in SUNYA Libraries: YES
- 12- Classification Society of North America (ISP)
Publications in SUNYA Libraries: YES
- 13- Decision Sciences Institute (BU)
Publications in SUNYA Libraries: NO
- 14- IEEE [Institute of Electrical & Electronic Engineers]
(BU, ISP) Publications in SUNYA Libraries: YES
- 15- Mathematical Association of America (ISP)
Publications in SUNYA Libraries: YES
- 16- N.F.A.I.S. (ISP),SUNYA LIBRARIES: YES
- 17- Psychometric Society (ISP)
Publications in SUNYA Libraries:BF1P86
- 18- SLA [Special Libraries Association] (ISP)
Publications in SUNYA Libraries: YES
- 19- Society for Computer Simulation [see: Simulation
Council,Inc. SCI Simulation] (ISP), (PA)
Publications in SUNYA Libraries: Yes
- 20- Society for Information Management (BU)
Publications in SUNYA Libraries: NO
- 21- The Institute for Management Sciences (BU)
Publications in SUNYA Libraries: YES
- 22- Systems Dynamics Society (PA)
- 23- Society for Judgment and Risk Assessment (PA)
- 24- None yet (HFA)

C. STATISTICAL SUMMARY

1. COLLEGES AND SCHOOLS COVERED

a. Responses received from:

- School of Business [BU:3/5]

- College of Humanities & Fine Arts
(including Departments of French Studies, Slavic
Languages & Literature) [HFA:1/3]
- School of Information Science & Policy
(including librarians) [ISP:5/5]
- College of Science & Mathematics
(including Dept. of Computer Science) [SM:1/5]
- College of Social & Behavioral Sciences
(including Depts. of Communication, Economics
and Psychology) [SB:2/5]
- Graduate School of Public Affairs
[PA:1/4]

b. Responses not received from:

- School of Education
(including Depts. of Educ. Administration & Policy
and of Educ. Psychology & Statistics) [EDUC:0/2]
- School of Social Welfare [SW:0/2]

2. SCOPE OF THE SURVEY

Positive responses..... 13
 Declined to respond..... 6
 Total responses 19 (ie 59.37% of total sample)

Not responded..... 13
 TOTAL mailed 32 questionnaires

Faculty members of the PhD Program Committee: 22
 Number of responses received from that group: 10
 (i.e. 45.45% of the group)

Proposed Program Faculty :..... 18
 Number of responses received from that group... 7
 (i.e., 33.3% of the group)

Disciplines represented in the survey: 12 fields
 Number of disciplines responding in that group... 8 fields
 (i.e., 66.6% of the group)

3. RELEVANT SUNYA LIBRARIES HOLDINGS SAMPLED:

Number of key papers sampled:..... 46
 (included two unpublished papers & one on order)
 located in SUNYA Libraries:.....38

Number of primary journals sampled:..... 33
 located in SUNYA LIBRARIES: 30
 (includes one journal with incomplete holdings)

Number of textbooks sampled:..... 8
 located in SUNYA Libraries:..... 5

Number of organizations sampled:..... 21
 publications located in SUNYA libraries..... 18